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# MERCHANDISING DISPLAY TRACK DEVICE OF MULTIPLE-PIECE CONSTRUCTION

## BACKGROUND OF THE INVENTION

This invention relates to a display track device for merchandising articles, and more particularly to a channel-shaped track device of a multiple-piece construction which enables low-cost molding of such devices.

Channel-shaped track devices have been used in the merchandising of a variety of products. The track devices, typically, are supported on a support surface such as a shelf in a tilted condition. Each device receives articles in a row so that the received articles slide or gravity feed one after another to the front of the respective track as the leading articles in the row are removed from the track. Among these known track devices, two-piece construction devices are disclosed, for example, in U.S. Pat. No. 4,478,337 (Flum); U.S. Pat. No. 4,724,968 (Wombacher); and U.S. Pat. No. 5,240,126 (Foster et al). Wombacher and Foster et al each disclose a track device having a separate front stopper attached to the track base. Because these patents require a transversely extending front wall to assure the structural strength of the device, the front stoppers taught by these patents cannot be used to construct some type of tracker devices wherein such front walls are not desired. Front walls would conflict with the arrangement shown, for example, in U.S. Pat. No. 5,645,176 to Jay where increased visibility of leading articles is intended.

Flum's device includes front and rear separate members arranged in telescoping relationship which may be employed in Jay's track device. However, the Flum patent requires side walls of a hollow, double-wall structure which is not only expensive but also bulky such that it requires substantial dead space between two adjacent tracks.

What is needed, therefore, is an improved multiple-piece construction track device which allows economical application of a variety of designs to different portions of the track.

## SUMMARY OF THE INVENTION

The track device of the invention has a special joint for firmly connecting two or more separate lengths of the track device together to create a one continuous track.

The present invention in one aspect provides a merchandising track device comprising first and second elongate track members formed separately as two discrete structures. The first and second members are connected together in an end-to-end, longitudinally adjacent relationship. Each member comprises a track base for carrying articles for sliding movement along the respective member, and at least one article-guiding side wall upstanding from the track base of the respective member and extending along the respective member. The one side wall of the first member is disposed in general longitudinal alignment with the one side wall of the second member. The track device further comprises locking means for interconnecting the one side wall of the first member and the one side wall of the second member to lock the first and second members in position relative to each other. The locking means comprises longitudinal retention means for preventing longitudinal displacement of the one side wall of the first member relative to the one side wall of the second member.

This arrangement allows low-cost application of a variety of designs as well as materials to different parts of the track device. For example, an expensive mold of a complicated

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structure can be replaced by two or more less expensive, less complicated molds to form the device of the invention. Further, expensive material can be used only for a particular portion of the device where the use of such material is essential.

In a preferred embodiment, the longitudinal retention means comprises an overhang extending rearward from the one side wall of the first member along the upper edge of the one side wall of the second member, and a lug depending from the overhang and received in a cutout formed along the upper edge of the one side wall of the second member. In addition to the longitudinal retention means, the locking means may also include lateral retention means for preventing lateral displacement of the one side wall of the first member relative to the one side wall of the second member. The lateral retention means comprises a pair of engaging tabs provided for the first member. The engaging tabs are disposed respectively alongside the opposite side surfaces of the one side wall of the second member, and at least one of the engaging tabs is formed on the lug.

The present invention in another aspect provides a merchandising track device comprising first and second separately formed, elongate track members. The first and second members are connected together in an end-to-end, longitudinally adjacent relationship. Each member comprises an article-carrying track base. The second member comprises a tongue extending longitudinally from the track base of the second member which tongue defines an end of the second member. The first member has an end-opening socket for receiving the tongue so that the track bases of the first and second members are interconnected to form a continuous floor for slidably supporting articles. This arrangement also allows economical application of a variety of designs and materials to different parts of the track device.

In a preferred embodiment, the track base of the first member comprises upper and lower opposed walls, and the socket is defined between the upper and lower walls.

In another preferred embodiment, the upper surface of the tongue is disposed below the continuous floor of the device so that the upper surfaces of the track bases may lie in a common plain. The tongue may be provided with a downwardly projecting hooking element, and the track base of the first member may have a transversely extending edge for engaging the hooking element to prevent longitudinal displacement of the first member with respect to the second member.

The present invention in a still another aspect provides a merchandising track device comprising an elongate body, and a front piece formed as a discrete structure and attached to the front end of the body. The body comprises a track base for carrying a row of articles for sliding movement along the body, and at least one article-guiding side wall upstanding from the track base and extending along the body. The front piece provides a stopper for preventing the leading article in the row from exiting the track device. The front piece comprises a deck for supporting the leading article, at least one longitudinally extending upright wall upstanding from the deck and disposed in general longitudinal alignment with the one side wall, and locking means for interconnecting the one upright wall and the one side wall to lock the front piece in position relative to the body.

The elongate body and the front piece may be molded from either plastic or metal (e.g., aluminum, aluminum compound or the like). The body and the front piece may be formed from different material. Although any plastic or metal may be used to construct the device of the invention,

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the most preferred material for the body is polystyrene whereas the most preferred material for the front piece is polycarbonate.

A preferred embodiment of the locking means comprises lateral retention means for preventing lateral displacement of the one upright wall relative to the one side wall. Such lateral retention means may be a pair of engaging tabs provided for the one upright wall which engaging tabs are disposed alongside the opposite side surfaces of the one side wall, respectively. These engaging tabs are disposed with a lateral gap therebetween to receive in the gap an edge of the one side wall. The engaging tabs may be opposed to each other across the thickness of the one side wall. Alternatively, the engaging tabs may be disposed at positions offset from each other along the length of the one side wall.

Another preferred embodiment of the locking means comprises longitudinal retention means for preventing longitudinal displacement of the one upright wall relative to the one side wall. The longitudinal retention means may comprise an overhang extending rearward from the one upright wall along the upper edge of the one side wall, and a lug depending from the overhang. Such a longitudinal retention means cooperates with a cutout formed along the upper edge of the one side wall to receive the lug.

The aforementioned lateral retention means may also be incorporated into the arrangement with the longitudinal retention means which lateral retention means comprises a pair of engaging tabs provided for the one upright wall. In such an arrangement, at least one of the engaging tabs is formed on the lug. In the arrangement where both the engaging tabs are formed on the lug, the lug may have a thickness greater than the thickness of the one side wall. Alternatively, in the arrangement wherein only one of the engaging tabs is formed on the lug, the other tab may be formed on the one upright wall or on the overhang.

The present invention in a further aspect provides a merchandising track device comprising an elongate body and an attached front piece. The body comprises a track base for supporting a row of articles for sliding movement along the body, and a tongue extending forwardly from the track base and defining the forward end of the body. The front piece provide a stopper for the leading article in the row. The front piece comprises a deck for supporting the leading article which deck has a socket for receiving the tongue so that the deck and the track base are interconnected to form a continuous floor for slidably supporting the articles.

In a preferred embodiment, the deck comprises upper and lower opposed walls, and the socket is defined between the upper and lower walls.

In another preferred embodiment, the upper surface of the tongue is disposed below the continuous floor so that the upper surface of the deck and the upper surface of the track base may lie in a common plain. The tongue may be provided with a downwardly projecting hooking element, and the deck may have a transversely extending edge for engaging the hooking element to prevent forward displacement of the front piece.

The objects and advantages of the present invention will be apparent from the following description, the accompanying drawings and the appended claims.

#### BRIEF DESCRIPTION OF THE DRAWINGS

In the drawings,

FIG. 1 is a perspective view of a shelf unit assembled from a plurality of track devices according to the present invention;

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FIG. 2 is a fragmentary perspective view of one of the track devices in FIG. 1;

FIG. 3 is an exploded perspective view of the track device in FIG. 2;

FIG. 4 is a front elevation of the front piece in FIG. 3;

FIG. 5 is a bottom plan view of the front piece in FIG. 3;

FIG. 6 is a view taken along the line VI—VI in FIG. 5;

FIG. 7 is a view similar to FIG. 6 except that the body is connected to the front piece by the insertion of the tongue into the socket;

FIG. 8 is an enlarged perspective view of the locking means in FIG. 3;

FIG. 9 is a top plan view of the front piece in FIG. 3;

FIG. 10 is an enlarged top plan view of the locking means in FIG. 9;

FIG. 11 is an exploded top plan view of the second embodiment of the present invention;

FIG. 12 is a front elevation of the joined front pieces in FIG. 11;

FIG. 13 is a front elevation of the joined bodies in FIG. 11; and

FIG. 14 is an enlarged perspective view of the locking means in FIG. 11.

#### DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

FIG. 1 illustrates a display shelf unit assembled from multiple track devices according to the present invention. This shelf unit is designed to merchandise articles C such as bottled or canned drink products. The shelf unit includes a plurality of elongate track devices 20 detachably interconnected in a side-by-side, transversely adjacent relationship. The number of the track device 20 used to assemble the shelf unit is determined such that the size of the shelf unit is suitable for placement onto an existing display shelf in a retail store in which the unit is desired to be installed. The interconnection of two adjacent track devices is achieved by connecting means such as connector slots 80 (shown in FIG. 1) cooperating with L-shaped horizontal connector elements 82 (only one shown in FIG. 2). Details of the slots 80 and the elements 82 are described in U.S. Pat. No. 5,634,564 which is hereby incorporated by reference. Additional connecting means are provided at the front portion of each device which additional means will be described later.

The shelf unit may be supported on a horizontal surface and may preferably be incorporated with a spring-loaded pusher for moving the loaded articles forwardly of the unit. An example of conventional pushers is shown in U.S. Pat. No. 5,634,564. However, the shelf unit may also be supported on a forwardly and downwardly tilted surface. In a tilted condition, each track device 20 operates as a so called "gravity feed" dispensing device which does not require any mechanical pushers. On a gravity feed device, the loaded articles have a natural tendency to automatically slide downwardly and forwardly to the front end of the track. The angle of tilt from the horizontal may vary somewhat but such an angle may be about 1 to 20 degrees and preferably about 3.5 to 8 degrees. The angle of tilt in most applications of the invention may be approximately 6 degrees from horizontal.

FIGS. 2 and 3 illustrate one of the track devices 20 in the form separated from the shelf unit. As all the devices 20 are virtually the same in size and structure, only one device is described hereinafter. As illustrated, the track device 20 has a two-piece construction formed of molded plastic material

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and includes a first member or front piece 24 and a second member or elongate track body 22. The body 22 includes an article-supporting track base 26, an article-guiding side wall 28, a rear wall 30, and a side lip 32. The side wall 28 is upstanding from one of the side edges of the track base 26. The rear wall 30 is upstanding from the rear end of the track base 26. The side lip 32 is formed along the other side edge of the track base 26. The track base 26, the side wall 28 and the side wall of the adjacent track body 22 (shown in FIG. 1), in cooperation, define a channel for receiving a row of articles C.

The front piece 24 is molded separately from the body 22 to provide a front stopper for preventing the leading article in the row from exiting the track device. As illustrated in FIGS. 2, 3 and 4, the front piece 24 includes a track base or deck 34, a longitudinally extending side wall or upright wall 36, an upper stopper element 38, and a pair of lower stopper elements 40. The upright wall 36 is upstanding from one of the opposite side edges of the deck 34 to be disposed in general longitudinal alignment with the side wall 28. The upper stopper element 38 extends transversely of the device 20 to bridge between the respective upper ends of the upright wall 36 and a post 42 which is upstanding from the other side edge of the deck 34. The upper stopper element 38 is the portion against which the leading article on the respective device 20 rests when it is arrested by the front piece 24. Details of the upper stopper element are described in U.S. Pat. No. 5,645,176 which is hereby incorporated by reference. The lower stopper elements 40 extend upwardly from the deck 36 along the respective front edges of the upright wall 36 and the post 42. These lower stopper elements 40 cooperate with the upper stopper element 38 to arrest the leading article.

To interconnect the front piece 24 with the body 22, a tongue 44 is formed integrally with the body 22 as shown in FIG. 3. The tongue 44 extends forwardly from the track base 26 and defines the forward end of the body 22. A pair of notches 46 are formed in the tongue 44 to divide the tongue 44 into three portions, i.e., a pair of side portions 48 and a medial portion 50. Due to the notches 46, the medial portion 50 exhibits substantial flexibility. The medial portion 50 is provided along its transversely extending free end edge with a downwardly projecting hooking rib 52.

The upper surface of the tongue 44 is disposed below a common plane in which the tops or peaks of upwardly projecting parallel ribs 54 lie. The ribs 54 are formed integrally with the track base 26 along the length of the track device 20 to minimize friction between the track base 26 and the articles to be carried thereon. In other words, the ribs 54 provide a part of the "continuous floor" for slidably supporting articles, which continuous floor lies in the aforesaid common plane. Because the upper surface of the tongue 44 is below the common plane, the deck 34 is allowed to cooperate with the ribs 54 to form the continuous floor when the front piece 24 is attached to the body 22. This will be described later more specifically. The ribs 54, preferably, are arranged at equal spacings and are of a generally trapezoidal cross section.

The means for cooperating or mating with the tongue 44 is provided for the front piece 24 in the form of a socket 60 that is defined between the upper and lower opposed walls 56 and 58 of the deck 34 (see FIGS. 5 and 6). The lower wall 58 includes a strip portion 62 extending transversely of the deck 34. This strip portion 62 has a front face which provides a transversely extending engaging edge 64 for engagement with the hooking rib 52 of the tongue 44. The rear face 66 of the strip portion 62 slopes downwardly and rearwardly to facilitate insertion of the tongue 44 into the socket 60.

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Further, the upper wall 56 of the deck 34 is formed integrally with a plurality of upwardly projecting parallel ribs 68. These ribs 68 are arranged such that they are brought into longitudinal alignment with the ribs 54 of the track base 26 when the front piece 24 is attached to the track body 22. However, the vertical size of the ribs 68 is substantially less than that of the ribs 54 so that when the body 22 and front piece 24 are interconnected, the tops or peaks of the ribs 68 and those of the ribs 54 can lie in the aforesaid common plane to provide the "continuous floor" for articles. For this reason, the vertical size of the ribs 54 is equal to the total thickness or vertical size of the upper wall 56 and the ribs 68. This is best shown in FIG. 7.

Locking means is provided for the front piece 24 to interconnect the upright wall 36 and the side wall 28. Such locking means comprises an overhang 70 joined to the upright wall 36 and extending rearward along the upper edge of the side wall 28. An engaging lug 72 is formed integrally with the overhang 70 and depends from the overhang 70 to be received in a cutout 74 (shown in FIG. 3) formed in the side wall 28 along its upper edge. The thickness or transverse size "T" (shown in FIG. 5) of the lug 72 is greater than that of the side wall 28.

As best shown in FIGS. 5 and 8, a pair of inner and outer engaging tabs 76 and 78 are joined to the lower end of the lug 72 and extend downwardly therefrom. These engaging tabs 76 and 78 are disposed with a lateral gap "G" between themselves to receive in the gap "G" the horizontally extending periphery of the cutout 74. The illustrated engaging tabs 76 and 78 are disposed at positions offset from each other; however, they may be transversely aligned or opposed across the gap "G".

In addition, keyhole apertures 84 (shown in FIGS. 2, 3, 6 and 7) are formed in the upright wall 36 to connect the front piece 24 with the adjacent like front piece. Mating with the keyhole apertures 84 are headed tabs 86 of a T-shaped vertical cross section projecting sideward from the post 42 (shown in FIGS. 4, 5 and 9). These apertures and tabs 84 and 86 cooperate with the aforementioned slots and elements 80 and 82 to interconnect the track device 20 with an adjacent like track device. In place of these illustrated connecting means, however, a variety of conventional mechanisms may be used to secure two adjacent track devices 20 in such a side-to-side, transversely adjacent relationship.

The above body 22 and the front piece 24 may be molded from either plastic or metal; however, they are preferably formed from a plastic material such as polyvinyl chloride, polystyrene, polycarbonate or the like. Among these plastic materials, the most preferred material for manufacturing the body 22 is high impact polystyrene whereas the most preferred material for manufacturing the front piece 24 is polycarbonate. The polystyrene for molding the body 22 may have silicone or some other suitable lubricant material dispersed therein in order to reduce friction between the ribs 54 and the articles to be placed thereon. However, body 22 and the front piece may be formed from the same material. For example, when both the body 22 and the front piece 24 are made of polycarbonate, an entirely transparent track device may be created.

The front piece 24 may be attached to the body 22 in the following manner: The tongue 44 of the body 22 is inserted through the rear end opening (i.e., the entrance of the socket 60) of the deck 34 until the lug 72 abuts the front edge of the side wall 28. The overhang 70 is then slightly flexed toward either side of the side wall 28 to prevent the lug 72 from interfering with the side wall 28. Further forward movement